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ABSTRACT

The methods and validity of evaluations of cognitive development, in language and numbers, of children ages three through six, by use of classroom observation inventory lists are discussed. The Evaluation of Cognitive Development--Pre-Reading Skills, an observational instrument (teacher completed), was administered to 134 first grade students in a Gulfport (Mississippi) project in order to determine the presence of 64 behaviors regarded as significant in evaluating pre-reading skills. Thirty-two behaviors were exhibited by all or nearly all of the students. A factor analysis of the remaining 32 variables yielded eleven that were strongly associated with achievement and readiness. These variables were placed into two general categories: behavior associated with interaction with other children, and behavior relating to phonic discrimination. Thus, the results indicate that certain social behaviors and behaviors reflecting phonics ability were clearly related to reading readiness and achievement even late in the first grade. Whether this behavior pattern is applicable to the population of other grade and age levels is yet to be determined. A longitudinal study, as well as additional performance validity of the eleven variables, in the age group three to six, is recommended. (AE)

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DEVELOPMENT AND USE OF "EVALUATION OF COGNITIVE DEVELOPMENT--PRE-READING SKILLS"

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Efforts to develop adequate measurement instruments to be used for assessment of early childhood learning have increased substantially within the past decade. There has been more success at the primary than the preprimary level probably due to the fact that preprimary children do not have enough of a grasp of the skills of reading to respond to group paper and pencil tests. The adequacy of technical measurement characteristics is also questionable at the very early ages.

If one works with first graders and especially with three, four, and/or five year olds in a structured setting, he very soon discovers that the assessment of outcomes is very difficult. In addition to the usually administered individual or group tests such as ability or achievement, it seems mandatory to use other methods of estimation to better describe cognitive development or progress of the very young especially in the areas of language and numbers.

This thinking led to an effort to establish "observation" as a technique for evaluating children's learning progress, in the pre-primary program at Suder School, an experimental field center for the Research and Development Center of the University of Georgia.

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Certain areas of growth were designated in three-, four-, and five-year-old children, and a list of sequential signs of growth in each of these areas in the form of descriptive behaviors was devised. The indicated area of growth considered was pre-reading skills. The pre-reading skills are represented in "Evaluation of Cognitive Development--Pre-Reading Skills" (Goolsby, 1969).

To develop the protocol, it was necessary for many teachers to have observed many children through the preprimary years in a school situation which provided opportunities, experiences, and guidance for growth. Teachers of ten preprimary groups of children, three, four, and five years of age, noted the kinds of symptoms that they had observed in the classroom and that they felt showed developmental progress in children's learning. The content of the scale was rethought, rewritten, discussed, and rearranged many times as the teachers observed and followed the changes in the children.

Inventory sheets on which to indicate changes were drawn up and periodic checks were made in order to learn whether a positive sign of certain symptoms could be observed. No record was made of a behavior until it had been observed positively.

The areas of development included in the protocol are following directions, dramatizing, being read to, bookhandling, relating persons and names, word-related discrimination both visual and auditory, and attempts to read.

Symptoms to be observed positively are, for example: "Follows simple directions," "Orients book correctly," "Listens to stories without pictures," "Sees simple likenesses and differences," etc.

These are a few of the symptoms from the various categories. A complete list of these symptoms can be found on the protocol.

In using this protocol, the teacher notes for each child the date when she observes a positive demonstration of a symptom. By keeping an individual profile for each child the teacher may provide a record of his personal progress in these behaviors during the preprimary period.

A description is presented in the manual for the protocol for each symptom appearing on the protocol.

Through the use of certain procedures of factor analysis and the relationships of scores on the protocol at three, four, five, and six years old to later and limited concurrent data, the usefulness of the protocol can be determined and revised. These procedures should also lead to other procedures for assessment in early childhood learning. About the time the protocol was completed, the authors were terminating a first grade project in the Gulfport Municipal Separate School District, Gulfport, Mississippi.

Procedures

The protocol was administered to 134 students which was a representative subset of the experimental and comparison groups of the Gulfport project. This administration consisted of the teachers marking whether each of the 64 behaviors related to reading was present for each student.

It was judged that the administration of the protocol at the end of first grade would give important insights into the structure of the protocol since considerable achievement and readiness data were available. The use of the protocol at that time was strictly for experimental purposes.

It was expected that many of the behaviors listed would be exhibited by all or nearly all of the students completing first grade. Of the 64 behaviors listed, 32 were exhibited by all or nearly all students in both the experimental and comparison groups. The variables representing the other 32 behaviors not attained by all or nearly all of the students were then combined with the following readiness and achievement variables in a factor analysis: Word Meaning, Listening, Matching, Alphabet, and Copying Subtests of the Metropolitan Readiness Tests (MRT); Mental Age (Otis-Lennon); Botel Potential Level; Botel Instructional Level; Teacher Evaluation; and the Word Knowledge, Word Discrimination, and Reading Subtests of the first and second administrations of the Metropolitan Achievement Tests (MAT).

Unities were placed in the diagonals of the matrix of inter-correlations between the 15 readiness and achievement variables and the 32 variables representing behavior not attained by all or nearly all students. A principal component extraction followed, which was terminated when eigenvalues of less than unity were encountered. A varimax rotation was then performed on all factors with eigenvalues greater than 1.5.

Results and Discussion

The results of this analysis are not shown in tabular form because of their length and because a few words serve to present the essential outcome. All achievement and readiness variables loaded on a single factor. On this same factor, 11 of the behavior variables also had loadings greater than .4. Loadings on the other 21 behavior variables were spread over eight additional factors, each accounting for only a very small proportion of variance.

It is with regard to the 11 behavior variables loading on the achievement-readiness factor that interpretation can be made with respect to this factor analysis. Whatever the relationship of the other 21 variables may be with respect to each other, there is certainly no evidence to suggest that they are strongly related to achievement or readiness late in the school year using the constructs as they are defined by the items in these achievement and readiness tests.

Conclusions of great potential importance may be drawn with regard to the 11 behavior variables which were strongly associated with achievement and readiness. These variables are:

Following simple directions in a group setting.

Following multiple directions in a group setting.

Composing an original story.

Recognizing written name of others.

Writing names of others.

Spelling orally names of others.

Distinguishing words according to initial letters.

Distinguishing words according to letter order.

Discriminating beginning letter sounds.

Discriminating ending letter sounds.

Bringing library or other books to read (himself).

This list of behaviors separates itself naturally into two categories: First, behavior relating to interaction with other children; and second, behavior relating to phonic discrimination. It is strongly suggested by this outcome that teachers and investigators of learning processes in children of this age concentrate upon the implied relationship between these two categories of variables and reading achievement.

The results just reported hold for all major groups which were distinguishable in the experimental design of the larger study. Separate factor analyses were performed on males and females, experimental and comparison students, Negroes and whites, and on high and low readiness students. In some cases, the observed relationships were weakened slightly due to restriction in range of the variables, but in every case the same basic pattern emerged. Certain social behaviors and behaviors reflecting phonics ability were clearly related to reading readiness and achievement even late in the school year.

Whether this pattern is generalizable to the population at other grade and age levels is to be determined. What other behaviors are important will need considerable attention and investigation.

The longitudinal study of these and revised behaviors from age three to six is greatly needed. The 53 of 64 variables not treated or having one hundred percent performance probably function in important ways from age three to six. It will be of even greater interest to determine the performance of the 11 variables listed above from age three to six.

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